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SPACE GATEWAY SUPPORT (SGS)

SGS-09 91 13.00 99 (April 2006)

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Superseding SGS-09950J (February 2005)

SGS GUIDE SPECIFICATIONS

References are NOT in Agreement with UMRL dated 01 April 2006

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SECTION 09 91 13.00 99

EXTERIOR PAINTING 04/06

NOTE: This guide specification covers the requirements for exterior coating systems, including substrate repairs and replacements, surface preparation, and the extent of coating maintenance..

Brackets are used in the text to indicate designer choices or locations where text must be supplied by the designer.

PART 1 GENERAL

This section specifies the following four areas for items associated with a facility undergoing coating maintenance:

- a. Extent of Coating Maintenance
- b. Surface Preparation
- c. Substrate Repair/Replacement Methods
- d. Coating Systems

These four areas contain specifications for various types of methods. For a particular item, the Contractor will be directed to specific sections in each of these four areas that will compile a precise coating maintenance specification specific to that item. The Contractor should be aware that these compiled coating maintenance specifications will vary for various items associated with the same facility.

1.1 REFERENCES

NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a RID outside of the Section's

Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.

The publications listed below form a part of this section to the extent referenced:

ASTM INTERNATIONAL (ASTM)

ASTM A 123/A 123M	(2002) Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A 276/A 276M	(2004) Standard Specification for Stainless Steel Bars and Shapes
ASTM A 312/A 312M	(2004b)Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes
ASTM B 209/B 209M	(2004) Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
ASTM B 370	(2003) Standard Specifications for Copper Sheet and Strip for Building Construction
ASTM C 834	(2000e1) Latex Sealants
ASTM C 881/C 881M	(2002) Epoxy-Resin-Base Bonding Systems for Concrete

THE SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC SP 1	(1982; R 2000) Solvent Cleaning
SSPC SP 11	(1987; R 2000) Power Tool Cleaning to Bare Metal
SSPC SP 12	(1995) Surface Preparation and Cleaning of Steel and Other Hard Materials by High-and Ultra high-Pressure Water Jetting Prior to Recoating
SSPC SP 2	(1982; R 2000) Hand Tool Cleaning
SSPC SP 3	(1982; R 2000) Power Tool Cleaning
SSPC SP 6	(2000) Commercial Blast Cleaning

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 EXTENT OF COATING MAINTENANCE

This section explains the extent to which surface preparation shall be carried out by defining the three coating maintenance methods. Follow the extent of coating maintenance method referenced in the Project Engineer's compiled coating maintenance specification for a specific item.

3.1.1 Spot Touch-Up Only

The existing system is aesthetically sound with no apparent chalking of the existing coating system. Only minor areas of repair and touch-up work require attention. Execute the actual surface preparation method(s) referenced for a specific item in the Project Engineer's compiled coating maintenance specification in the following manner.

- a. Prepare areas of coating deterioration down to substrate or a subsequent tightly adherent coating.
- b. Prepare areas of corrosion down to bare metal.
- c. Reference the appropriate procedures listed in paragraph 3.3 for areas requiring substrate repair.
- d. Feather edge areas of intact coating system surrounding the prepared areas at a minimum of 2 inches into the existing topcoat to ensure a smooth transition from the prepared area to the existing topcoat. This will help prevent lifting and ensure an aesthetic finish.
- e. Clear the local area surrounding the repair of dirt, mildew, or other foreign matter that will hinder the adhesion of the applied coating system. Cleaning these localized areas will accommodate the minimum application of topcoat to a neatly squared off touch-up area.

3.1.2 Spot Touch-Up And Overcoat

The existing coating system will support application of an additional coating system once chalking and localized areas requiring touch-up and repair are addressed. Execute the actual surface preparation method(s) referenced for a specific item in the Project Engineer's compiled coating maintenance specification in the following manner:

- a. Prepare areas of coating deterioration down to substrate or a subsequent tightly adherent coating.
- b. Prepare areas of corrosion down to bare metal.
- c. Reference the appropriate procedures listed in paragraph 3.3 for areas requiring substrate repair.
- d. Feather edge areas of intact coating system surrounding the prepared areas at a minimum of 2 inches into the existing topcoat to ensure a smooth transition for the prepared area to the existing topcoat. This will help prevent lifting and ensure an aesthetic finish.
- e. Clean the entire surface of the item undergoing coating maintenance of chalking, dirt, mildew or other foreign matter that will hinder the

adhesion of the applied coating system.

f. Scarify (sand) areas of gloss finish to remove gloss finish and allow adhesion of new applied overcoat.

3.1.3 Complete Removal And Repaint

Extent of coating deterioration has degraded past the point of effectively supporting subsequent coating system application; therefore, total coating removal is necessary. Execute the actual surface preparation method(s) referenced for a specific item in the Project Engineer's compiled coating maintenance specifications in the following manner:

- a. Reference the appropriate procedures listed in paragraph 3.3 for area requiring substrate repair.
- b. Completely remove all coating systems down to bare substrate.

3.2 SURFACE PREPARATION METHODS

The surface preparation references directed by the Project Engineer correspond to standard surface preparation methods assigned by the Society for Protective Coatings (SSPC).

The individual and combined surface preparation methods that are referenced by the Project Engineer are described in this section to address specific details pertaining to various substrates.

Use these methods to prepare the surface to the extent necessary (paragraph 2.0, Extent of Coating Maintenance) to accomplish surface preparation in accordance with Appendix A.

Note: Proper containment, Project Engineering controls, and personal protective equipment must be implemented in accordance with Section 02 83 00.00 99 LEAD REMEDIATION if it is determined that the surface to be disturbed contains lead-based paint (LBP).

Implement controls to ensure all paint chips and debris generated from surface preparation are contained, handled and disposed of properly in accordance with Section 01 11 00.00 99 SUMMARY OF WORK and Section 02 83 00.00 99 LEAD REMEDIATION. These containments may consist of, but are not limited to ground tarpaulins, ground screens, hanging tarpaulins and hanging screens to control paint debris and mist travel from pressure washing.

Prior to commencing any of the following surface preparation methods, inspect all items to be prepared for visible signs of oil and grease. If oil and/or grease are noticed, solvent clean these surfaces in accordance with the guidelines set forth in SSPC SP 1.

3.2.1 SP-2

Prepare the surface using hand tools to accomplish surface preparation in accordance with the predetermined coating maintenance method and the SSPC quidelines for SSPC SP 2.

Exercise care not to damage the existing textured ground coat of the exterior insulation finish system (EIFS). However, if damage to the ground coat does occur due to the negligence of the Contractor, repair at not cost

to the Government.

3.2.2 SP 2*

Prepare the surface using hand tools to accomplish surface penetration in accordance with the predetermined coating maintenance method and in accordance with SSPC SP 2.

Exercise care as not to disturb the asbestos material.

3.2.3 SP 2/SP 3

Prepare the surface using hand and/or power tools as necessary to accomplish surface preparation in accordance with the predetermined coating maintenance method and SSPC SP 2 and SSPC SP 3.

Exercise care in choosing appropriate power tools such that the substrate is not damaged. However, if damage to the substrate does occur due to the aggressive nature of the power tool used, repair at no cost to the Government.

3.2.4 SP 6

Remove all coatings using abrasive blasting in accordance with SSPC SP 6 commercial blasting, recognizing that the requirements for remaining surface staining of previously existing coatings will also apply to masonry surfaces.

Adjust output pressures to accommodate production rates and ensure integrity of the existing substrate. Use uniform blast profile of 1.50 to 2.5 mils for metallic substrates (not to exceed 3.5 mils). Vacuum blast units may be utilized. However, open-air blasting is not permitted.

Use a Class 3A(minimum) containment (assuming no lead hazard) in accordance with SSPC SP 6 for proper containment for abrasive blasting.

Properly mask and protect items in the immediate vicinity that are not intended to be abrasively blasted to ensure they are not damaged. However, if these items are damaged, repair or replace these items at the discretion of the Project Engineer at no cost to the Government.

3.2.5 SP 11

Remove all coatings using power tool cleaning methods to prepare the metallic substrate to bare metal in accordance with $SSPC\ SP\ 11$. A surface profile of 1.5 to 2.0 mils is required.

Exercise care in choosing appropriate power tools such that the substrate(thin metal) is not damaged. However, if damage to the substrate does occur due to the aggressive nature of the power tool used, repair or replace the item at no cost to the Government.

3.2.6 SP 12 LOW PRESSURE WATER CLEANING (LPWC), SP 2/SP3

Remove all topcoat chalking, dirt, and miscellaneous surface contaminates using LPWC in accordance with $SSPC\ SP\ 12$, with a minimum output pressure of 2000 psi fresh, potable water.

Clean items from the top down so as not to contaminate lower sections

during work on higher areas. A secondary rinse will be required if cross contamination occurs. This pressure cleaning may remove most areas of loose paint. However, areas where loose paint was removed by pressure washing requires hand tool power tool cleaning in accordance with SSPC SP 2 and SSPC SP 3 to ensure areas of loose paint have been removed back to tightly adhered coatings.

Exercise care in choosing appropriate power tools such that the substrate is not damaged. However, if damage to the substrate does occur due to the aggressive nature of the power tool used, repair at no cost to the Government.

Use these methods to prepare the surface to the extent necessary to accomplish surface preparation in accordance with the predetermined coating maintenance method.

3.2.7 SP 12(LPWC), SP 2

Remove all topcoat chalking, dirt, and miscellaneous surface contaminates using LPWC in accordance with $SSPC\ SP\ 12$, with a minimum output pressure of 2000 psi fresh, potable water.

Clean items from the top down so as not to contaminate lower sections during work on higher areas. A secondary rinse will be required if cross contamination occurs. This pressure cleaning may remove most areas of loose paint. However, areas where loose paint was removed by pressure washing requires hand tool power tool cleaning in accordance with SSPC SP 2 to ensure areas of loose paint have been removed back to tightly adhered coatings.

Exercise care not to damage the existing textured ground coat of the EIFS. However, if damage to the ground coat does occur due to the negligence of the Contractor, repair at no cost to the Government.

Use these methods to prepare the surface to the extent necessary to accomplish surface preparation in accordance with the predetermined coating maintenance method.

3.2.8 SP 12(LPWC), SP 2*

Remove all topcoat chalking, dirt, and miscellaneous surface contaminates using LPWC in accordance with $SSPC\ SP\ 12$, with a minimum output pressure of 2000 psi fresh, potable water.

Clean items from the top down so as not to contaminate lower sections during work on higher areas. A secondary rinse will be required if cross contamination occurs. This pressure cleaning may remove most areas of loose paint. However, areas where loose paint was removed by pressure washing requires hand tool power tool cleaning in accordance with SSPC SP 2 to ensure areas of loose paint have been removed back to tightly adhered coatings.

Exercise care not to disturb the asbestos material.

Use these methods to prepare the surface to the extent necessary to accomplish surface preparation in accordance with the predetermined coating maintenance method.

3.2.9 SP 12 LP/HIGH PRESSURE WC(LP/WC WC)

Remove all coatings using either LPWC(2000-5000 psi) or HPWC(5000-10000 psi), choosing the minimum output pressure of fresh, potable water necessary to effectively remove the coating system in accordance with the requirements of SSPC SP 12 WJ-3.

Clean items from the top down so as not to contaminate lower sections during work on higher areas. A secondary rinse will be required if cross contamination occurs. Due to the pressures involved, open-air water cleaning/jetting is not permitted.

Use a Class 3W(minimum) containment(assuming no lead) in accordance with SSPC SP 6 for proper containment of all paint and blasting debris.

Properly mask and protect items in the immediate vicinity that are not intended to be water cleaned/jetted to ensure they are not damaged. However, if these items are damaged, repair or replace these items at the discretion of the Project Engineer at no cost to the Government.

3.2.10 SP 12 HPWC/WATER JETTING(HP WC/WJ)

Remove all coatings using either HPWC(5000-10000 psi) or HPWJ(10000-25000 psi), choosing the minimum output pressure of fresh, potable water necessary to effectively remove the coating system in accordance with the requirements of SSPC SP 12 WJ-3.

Clean items from the top down so as not to contaminate lower sections during work on higher areas. A secondary rinse will be required if cross contamination occurs. Due to the pressures involved, open-air water cleaning/jetting is not permitted.

Use a Class 3W(minimum) containment(assuming no lead) in accordance with SSPC SP 6 for proper containment of all paint and blasting debris.

Properly mask and protect items in the immediate vicinity that are not intended to be water cleaned/jetted to ensure they are not damaged. However, if these items are damaged, repair or replace these items at the discretion of the Project Engineer at no cost to the Government.

3.3 SUBSTRATE REPAIR/REPLACEMENT METHODS

Perform the repairs/replacement of substrate in accordance with the procedures referenced in this section.

3.3.1 Joint Repair

The intent of joint repair is to ensure water tight expansion control joints between the masonry block and cast concrete, as well as around windows and doors.

- a. Route joints to remove any deteriorated caulking/sealant compounds. Caulking that has good adhesion need not be removed, as determined by Inspector or Project Engineer.
- b. Repair all joints in the exterior of buildings and around doors and windows having deteriorated caulking and replace with new caulking as per specification Section 07 92 00.00 40 JOINT SEALANTS.

- c. Caulk all open joints. Force caulking into the joints in a manner to expel all air and fill the joint solidly and to ensure a uniformly smooth surface, free of voids.
- d. Use Green-Rod, Denverfoam or polyethylene tape behind sealant in expansion joints to provide backing material.

The following one-part acrylic latex sealant products meet the requirements of ${\sf ASTM}$ C 834 and are approved for use:

Manufacturer Product

Duron Magnum XL 40 Year Latex Silicone Adhesive Sealant

Tremco Tremco Acrylic Latex 834

Sonneborn Sonolac, General Purpose Gun-Grade Caulk

3.3.2 CMU, Concrete and Stucco Crack and Hole Repair

Using hand and power tools, remove all old paint and caulking from cracks and holes in substrate.

Feather back intact coating a minimum of 2 inches on either side of the crack/hole receiving repair to ensure a smooth appearance for subsequent coating application.

Apply epoxy cement to fill cracks and holes.

Follow procedures outlined for preparation and application of epoxy patching compounds for crack and hole repair referenced in Section 07 92 00.00 40 JOINT SEALANTS.

The following epoxy patching compounds are in accordance with ASTM C 881/C 881M, and are approved for use:

Manufacturer Product

Sika Sikadur 23, Lo-Mod Gel (large patches)

Sika Sikadur 31, Hi-Mod Gel (vertical and overhead cracks)

Sonneborn EpoFil, Lo-Mod Gel (large patches)

Sonneborn EpoFil, Hi-Mod Gel (vertical and overhead cracks)

3.3.3 Exterior Insulation Finish Systems Repair

EIFS are proprietary in nature and therefore present some element of uncertainty regarding repair. Generally the systems consist of the same basic components. The insulating foam substrate is mechanically fastened to a structural substrate. The insulation is covered with a base coat and fiberglass mesh and in turn coated with a polymer acrylic cementitious product. While unlikely, there may be cases where repair could result in incompatibility between base, prime and finish coatings. If the system can be identified, use the materials and directions supplied by that company unless the company advises in writing that other materials and directions can be used in the repair process. If the system can not be identified, perform a test patch to repair to ensure against patch failure due to incompatible materials.

Products

a. 1 lb. cu. ft. expanded insulation to match thickness in initial

installation expanded polystyrene (EPS)

- b. Dispersion adhesive
- c. Ground coat
- d. Finish: Match same texture and color that was originally used where wall damage occurred

Major Manufacturer's of Exterior Insulation Finish Systems

STO Corporation, Alamonte Springs, FL, 1-800-432-8830 DRIVIT Corporation, Warwick, RI, 1-800-566-7752 BONSAL-SHUREWALL, Charlotte, NC, 1-800-334-0784 PERMA COATINGS CORPORATION, Atlanta, GA, 1-404-523-0493 DYPLAST Corporation, Lakeland, FL, 1-800-537-2739 PAREX Corporation, Redan, GA, 1-800-537-2739 PLECO Southeast Corporation, Lakeland, FL 1-813-683-6726 THORWALL Corporation, Miami, FL, 1-800-327-1570 SENERGY Corporation, Cranstion, RI, 1-800-221-9255 VITRICON Corporation, Hauppauge, NY, 1-800-777-6596 R-WALL Corporation, Atlanta, GA, 1-800-221-2397 TEC Corporation, 1-800-323-7407

3.3.3.1 Exterior Insulation Finish Systems Puncture Repair

Make patch large enough to work with. Whenever possible, make patched area coordinate or lineup with a feature (doors, windows, protrusions, etc.) of the building. This will help hide the visibility of the patch.

- a. Scrape off finish from the wall approximately 6 inches around the damaged area. Be careful not to damage the ground coat and mesh in this area.
- b. Cut mesh to approximately 4 inches from the outer perimeter of the existing finish.
- c. Remove the damaged area by cutting out a plug around the puncture, leaving a strip of good insulation board between the mesh and the damaged area.
- d. Scrape any remaining adhesive off the face of the substrate.
- e. Cut a piece of insulation board to fit the opening in the system. Make sure the fit is precise to avoid thermal breaks. Use slivers of spray foam, if necessary.
- f. Rasp plug to match thickness of existing insulation board if necessary before applying to substrate.
- g. Apply adhesive to the back of the insulation board and put in place with firm pressure. Allow to dry.
- h. Cut a piece of mesh to overlap existing mesh by 2 1/2 inches. Apply ground coat over area where mesh is to be placed.
- i. Imbed mesh in ground coat. Keep same thickness of existing ground coat and feather edges. Allow to dry before applying finish.
- j. After ground coat has dried, prepare area to receive finish. Use masking tape to cover existing finish around patch area.

- k. Apply finish and float to match texture of wall.
- 1. Remove masking tape and use a dry paint brush to blend wet finish into the dry finish. Note: Use of a wet paint brush may cause color variations with darker colors.
- 3.3.3.2 Exterior Insulation Finish Systems Damaged Corner Repair
 - a. In repairing corners, the insulation board must be replaced back far enough on the wall to allow proper adhesion of insulation board used to replace damaged areas.
 - b. Scrape off finish from the wall approximately 6 inches around the damaged area. Be careful not to damage the ground coat and mesh in this area.
 - c. Cut mesh to approximately 4 inches from the outer perimeter of the existing finish.
 - d. Remove the damaged area by cutting out a plug around the puncture leaving a strip of good insulation board between the mesh and the damaged area.
 - e. Scrape any remaining adhesive off the face of the substrate.
 - f. Cut a piece of insulation board to fit the opening in the system. Make sure the fit is precise to avoid thermal breaks. Use slivers of spray foam, if necessary.
 - g. Rasp plug to match thickness of existing insulation board of necessary before applying to substrate.
 - h. Apply adhesive to the back of the insulation board and put in place with firm pressure. Allow to dry.
 - i. Cut two pieces of mesh to overlap existing mesh by 2 1/2 inches. Apply ground coat over area where mesh is to be placed.
 - j. Imbed mesh in ground coat insuring the corner is double wrapped or reinforced with manufactured corner mat. Keep same thickness of existing ground coat and feather edges. Allow to dry before applying finish.
 - k. After ground coat has dried, prepare area to receive finish. Use masking tape to cover existing finish around patch area.
 - 1. Apply finish and float to match texture of wall.
 - m. Remove masking tape and use a dry paint brush to blend wet finish into the dry finish. Note: Use of a wet paint brush may cause color variations with darker colors.
- 3.3.3 Exterior Insulation Finish System Finish Patching
 - a. Scrape off the finish approximately 1 inch around the damaged area.
 - b. Use masking tape to cover existing finish around patched area.
 - c. Apply finish and float to match texture of wall.

- d. Remove masking tape and use a dry paint brush to blend wet finish into the dry finish. Note: Use of a wet paint brush may cause color variations with darker colors.
- 3.3.4 Wood Repair/Replacement

3.3.4.1 Repair

- a. Nail loose boards and trim with hot-dipped galvanized nails.
- b. Drive nails flush of countersink and putty.
- c. Fill all holes and imperfections with plastic wood filler.

3.3.4.2 Replacement

Exterior wood that requires replacement shall be replaced with like material and style as referenced in Section 06 10 00 ROUGH CARPENTRY and Section 06 20 00 FINISH CARPENTRY .

3.3.4.3 Replacement of Wood Doors and Frames

Refer to guidelines set forth in NASA Section 08 14 00.00 40 WOOD DOORS.

- 3.3.5 Metal Repair/Replacement
- 3.3.5.1 Sheet Metal Repair
 - a. Cut out all sheet metal with pitting more than 50% through material.
 - b. De-rust adjacent metal and replace with material identical to adjacent metal as specified under products.
 - c. Immediately prime all new surfaces.
 - d. Seal all patches with sealant specified in Section 07 92 00 JOINT SEALANTS such that water cannot migrate behind repair.
 - e. Bend all metal to match configuration of adjacent surfaces.
 - f. Slope so as to ensure water cannot be trapped or let stand.
 - g. Replace with same where galvanized wind uplift anchors are deteriorated. Inform CO if anchors are deteriorated beyond the point of identification.
 - h. Match replacement metals in accordance with the following:

Copper: ASTM B 370; temper H00 (cold-rolled) except where temper 060 is required for forming; 16 oz. (0.0216-inch thick) except as otherwise indicated.

Sheet Aluminum: ASTM B 209/B 209M, alloy 3003, temper H14, AA-C22A41 black anodized finish; 0.032-inch thick (20 gauge) except as otherwise indicated.

Extruded Aluminum: Manufacturer's standard extrusions of sizes and profiles indicated, 60063-T52, AA-C22A41 bronze anodized

finish; 0.080-inch minimum thickness for primary legs of extrusions.

Mild Steel: AISC grade A-36, galvanized ASTM A 123/A 123M, hot dip

Stainless Steel: Bars ASTM A 276/A 276M, pipe ASTM A 312/A 312M, grade TP 304

Mild Steel: AISC grade A-36, galvanized ASTM A 123/A 123M

i. Refer to the following metal references:

Copper Roofing - A Practical Handbook
NRCA(National Roofing Contactors Association) - Roofing Manual
SMACNA - Architectural Sheet Metal Manual
Galvanized Steel - National Association of Corrosion Project
Engineers Manual
Stainless Steel - AISI Stainless Steel Cold Formed Structural
Design Manual
Mild Steel - AISI Stainless Steel Cold Formed Structural Design
Manual

3.3.5.2 Structural Steel, Ladder, Railing Repair

Follow the quidelines referenced in section 05 50 00 METAL FABRICATIONS.

3.3.5.3 Metal Roof Repair

Follow the procedures outlined in section 07 01 60.71 99 FLASHING AND SHEET METAL REHABILITATION.

3.3.5.4 Steel Door and Frame Replacement

Follow the guidelines referenced in section $08\ 11\ 00.00\ 40\ \text{METAL}$ DOORS AND FRAMES.

3.3.5.5 Aluminum Door and Frame Replacement

Follow the guidelines referenced in NASA Section 08 11 16.00 40 ALUMINUM DOORS AND FRAMES.

3.3.5.6 Overhead Coiling Doors

Follow the guidelines in Nasasection 08 33 23.00 40 OVERHEAD COILING DOORS.

3.3.5.7 Door Hardware

Follow the guidelines in section 08 71 00 DOOR HARDWARD.

3.3.6 Gypsum Repair/Replacement

For small holes(less than 1" \times 2") and defects in exterior gypsum board, patch and finish with exterior gypsum patching compound.

For large defects or holes (greater than 1" \times 2"), remove deteriorated gypsum board and replace/finish area with exterior new section of gypsum board and exterior gypsum compound.

Follow the procedures outlined in section 09 20 00 PLASTER AND GYPSUM

BOARD".

3.3.7 Transite (Asbestos Board) Hole Repair

Without disturbing the asbestos material, apply epoxy patching compound in accordance with section 07 92 00.00 40 JOINT SEALANTS.

3.3.8 Alternate Methods of Repair

Other types of repair or replacement or architectural type materials may be referenced that do not directly fall within the categories typically associated with maintenance coating work. The following is a list of specification sections which contain guidelines for these types of repairs and/or replacements.

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Section 08 15 00.00 99 PLASTIC DOORS
Section 10 14 11 EXTERIOR SIGNAGE
Section 10 14 12 INTERIOR SIGNAGE
```

Project Engineer will specify type of repair or replacement on an individual basis for specialty type materials.

3.4 COATING SYSTEMS

The compiled coating maintenance specification provided by the Project Engineer references the appropriate exterior coating system number for a specific item. Any approved coating system for a referenced exterior coating system number may be used under the following conditions:

Use the coating system from the same manufacturer on a specific substrate. Mixing primers and topcoats from different manufacturers is not permitted.

Approved coating systems from different manufacturers may be used on different substrates on the same facility.

Prior to coating application, ensure surfaces are free of oil, dust, dirt, etc. Solvent clean areas of oil contamination in accordance with SSPC SP 1. Solvent wipe, vacuum, or duct areas of dust or dirt to the satisfaction of the onsite inspector.

The color and finish (i.e. satin, semi-gloss, gloss, etc.) to be used on specific items is specified in the compiled coating maintenance specification.

Apply materials by brush or roller. Spray application may be allowed if containment in accordance with SSPC SP 6 Class 2P containment with an overlap entryway is used.

Observe all recoat windows (minimum and maximum) per manufacturer's data sheets. Application of coatings are not allowed on damp surfaces. Application of coatings are not permitted when the surface temperature is the substrate is less than 5 degrees F below the dew point, or below 50 degrees F(10 degrees C), or if the relative humidity is greater than 80%, unless manufacturer's data sheets indicate otherwise.

The Inspector will monitor coating thickness measurements on substrates after sufficient cure and prior to application of additional coats. This is to ensure proper coating thickness for individual coats according to

each exterior coating reference.

3.4.1 Exterior 1

Refer to table 1 for high-performance acrylic primer and acrylic topcoat for concrete masonry units (CMU), stucco, and formed concrete (no moisture problems); exterior insulating finish systems; and transite.

Table 1. High-Performance Acrylic Primer and Acrylic Topcoat for CMU's, Stucco, and Formed Concrete(no moisture problems); Exterior Insulating Finish Systems; Transite

Sherwin Williams	Product Name	% Solids volume	Resin Type	VOC (g/L)
Primer	Loxon Exterior Masonry Primer A24W301	46	Vinyl Acrylic	123
Topcoat	Duration K32/K33	40	Acrylic	109

3.4.1.1 Coating Application for Exterior 1

Dry Film Thickness Schedule

Prime Coat: 2.0 mils DFT minimum

Topcoat: 2 coats at 2.0 mils DFT minimum each coat

Spot Touch-Up Only Method

Apply a spot coat primer application to areas down to bare substrate.

Apply two topcoat applications to the area of repair in a squared off fashion such that the smallest possible rectangular patch is used to cover the area of repair.

Spot Touch-Up and Overcoat Method

Apply a spot coat primer application to areas down to bare substrate.

Apply two complete topcoat applications to the entire paintable surface.

Complete Removal and Paint

Apply one full coat primer and two full coat topcoat applications to the entire paintable surface.

3.4.2 Exterior 2

Refer to table 2 for acrylic primer and acrylic topcoat for concrete masonry units (CMU's), stucco, and formed concrete (no moisture problems); exterior insulating finish systems; and transite.

Table 2. High-Performance Acrylic Primer and Acrylic Topcoat for CMU's, Stucco, and Formed Concrete(no moisture problems); Exterior Insulating Finish Systems; Transite

		% Solids	Resin	VOC
Sherwin Williams	Product Name	volume	Type	(g/L)

Sherwin William	Product Name		volume	Type	(g/L)
Primer	Loxon Exterior Masonry Acrylic Primer A24W301		46	Vinyl Acrylic	123
Topcoat-satin	A-100 Exterior Latex Satin House & Trim, A82 Series		34	Acrylic	102
Topcoat-gloss	A-100 Exterior Latex Gloss House & Trim, A8 Series		33	Acrylic	132
Duron	Product Name	%	Solids volume	Resin <u>Type</u>	VOC (g/L)
Primer	Maxbond Waterborne Masonry Surface Conditioner, white		23.2	Acrylic	128
Topcoat-s/g	Ultra Delux Exterior 100% Acrylic Latex Semi-Gloss		31	Acrylic	<250
<u>1C1</u>	Product Name	%	Solids volume	Resin <u>Type</u>	VOC (g/L)
Primer	Decra-Shield Exterior Acryl Latex Primer	ic	50	Acrylic	128
Topcoat-satin	Decra-Shield 100% Acrylic Satin Finish		36	Acrylic	0
Topcoat-s/g	Decra-Shield 100% Acrylic Semi-Gloss Finish		36	Acrylic	229
Danianin Masus	Dundant Name	%	Solids	Resin	VOC
Benjamin Moore	Product Name		volume	<u>Type</u>	<u>(g/L)</u>
Primer	Acrylic Masonry Sealer, 066		66	Acrylic	<350
Topcoat-satin	Mooreguard Latex House Paint, 103		66	Acrylic modified	<350
Topcoat-s/g	MoorGlo Latex House & Trim 096		66	Acrylic modified	<350
Pittsburgh	Product Name	%	Solids volume	Resin <u>Type</u>	VOC (g/L)
Primer	Acrylic Masonry Surface Primer 6-808		25.3	Vinyl Acrylic	<250
Topcoat-s/g	Sunproof 78 line		33	Acrylic	<250
Carboline	Product Name	%	Solids volume	Resin <u>Type</u>	VOC (g/L)
Primer	Flexxide HB Surface Primer/Conditioner		48	Vinyl Acrylic	180
Topcoat	Carboline 3350		36	Acrylic	283

3.4.2.1 Coating Application for Exterior 2

Dry Film Thickness Schedule

Prime Coat: 2.0 mils DFT minimum

Topcoat: 2 coats at 2.0 mils DFT minimum each coat

Spot Touch-Up Only Method

Apply a spot coat primer application to areas down to bare substrate.

Apply two topcoat applications to the area of repair in a squared off fashion such that the smallest possible rectangular patch is used to cover the area of repair.

Spot Touch-Up and Overcoat Method

Apply a spot coat primer application to areas down to bare substrate.

Apply two complete topcoat applications to the entire paintable surface.

Complete Removal and Paint

Apply one full coat primer and two full coat topcoat applications to the entire paintable surface.

3.4.3 Exterior 3

Refer to table 3 for elastomeric coating system for concrete, stucco and ${\tt CMU}$ with moisture problems.

Table 3. Elastomeric Coating System For Concrete, Stucco And CMU With Moisture Problems

Duron	Product Name	%	Solids volume	Resin Type	VOC (g/L)
Primer	Maxflex Step#1 Alkali Surface Conditioner		20	Methyl Methacrylat	189 te
Midcoat	Maxflex Step#2 High Performance Block Filler		52	Acrylic	64.3
Topcoat	Maxflex Step#3 Elastomeric Waterproof Finish Coat		41	Acrylic	70
<u>Carboline</u>	Product Name	જ	Solids volume	Resin <u>Type</u>	VOC (g/L)
Primer	Flexxide HB Surface Primer/Conditioner		48	Vinyl Acrylic	180
Midcoat	Flexxide Elastomeric Coating System, Smooth	3	41	Acrylic	47
Topcoat	Flexxide Elastomeric Coating System, Smooth	3	41	Acrylic	47

Pittsburgh	Product Name	% Solids volume	Resin <u>Type</u>	VOC (g/L)
Primer	Speedhide Latex Masonry Block Filler, 6-7	43	Vinyl Acrylic	264
Midcoat to Crack Repairs	Pitt-Flex Exterior Masonry Coating 100% Acrylic Elasto	46 meric	Acrylic	<250
Topcoat	Pitt-Flex Exterior Masonry Coating 100% Acrylic Elasto	46 meric	Acrylic	<250
Daniania Maana	Dundant Name	% Solids	Resin	VOC
Benjamin Moore	Product Name	volume	<u>Type</u>	(g/L)
Primer	Moore's Waterproofing Masonry Paint	33	Acrylic	<250
Topcoat	Moorelastic Acrylic Elastom Waterproofing 056	eric 66	Acrylic	<250
Republic Powdered Metals	Product Name	% Solids volume	Resin <u>Type</u>	VOC (g/L)
Primer	Solarguard Masonry Primer	59	Acrylic	<250
Topcoat	Solarguard Hy-Build	51	Acrylic	<250

3.4.3.1 Coating Application for Exterior 3

Dry Film Thickness Schedule

Prime Coat: 2.0 mils DFT minimum Midcoat: 4-5 mils DFT minimum Topcoat: 4-5 mils DFT minimum

Spot Touch-Up Only Method

Apply a spot coat primer application to areas down to bare substrate.

Apply midcoat and topcoat in a squared off fashion such that the smallest possible rectangular patch is used to cover the area of repair. If no midcoat is listed in the approved coating system, apply two topcoat squared off applications.

Spot Touch-Up and Overcoat Method

Apply a spot coat primer application to areas down to bare substrate.

Apply a complete midcoat and topcoat application to the entire paintable surface. If no midcoat is listed in the approved coating system, apply two topcoat applications.

Complete Removal and Paint

Apply one full coat primer, midcoat and topcoat application to the entire paintable surface. If no midcoat is listed in the approved coating system, apply two topcoat applications.

3.4.4 Exterior 4

Refer to table 4 for elastomeric system touch-up and acrylic topcoat for concrete, stucco and CMU which have been previously painted with elastomeric system.

Table 4. Elastomeric System Touch-Up And Acrylic Topcoat For Concrete, Stucco And CMU Previously Painted With Elastomeric System.

Duron	Product Name	%	Solids volume	Resin <u>Type</u>	VOC (g/L)
Primer	Maxflex Step#1 Alkali Surface Conditioner		20	Methyl Methacrylate	189
Midcoat	Maxflex Step#2 High Performance Block Filler		52	Acrylic	64.3
Elastomeric	Maxflex Step#3 Elastomeric Waterproof Finish Coat		41	Acrylic	70
Topcoat-s/g	Ultra Delux Exterior 100% Acrylic Latex Semi-Gloss		31	Acrylic	<250
Carboline	Product Name	%	Solids volume	Resin <u>Type</u>	VOC (g/L)
Primer	Flexxide HB Surface Primer/Conditioner		48	Vinyl Acrylic	180
Midcoat	Flexxide Elastomeric Coating System, Smooth	J	41	Acrylic	47
Elastomeric	Flexxide Elastomeric Coatir System, Smooth	ıg	41	Acrylic	47
Topcoat	Carboline 3350 System, Smooth		36	Acrylic	283
<u>MAB</u>	Product Name		Solids volume	Resin <u>Type</u>	VOC (g/L)
Primer	Lock-Tite Latex Surface Conditioner		21	Acrylic	170
Elastomeric (2cts)	Acra-Lastic 1400 or 2700 Waterproofing 056		53-57	Acrylic	180
Topcoat-s/g	Sea Shore/Four Seasons Acryl Latex Trim Enamel	ic	c 36	Acrylic	290
<u>Pittsburgh</u>	Product Name	%	Solids volume	Resin Type	VOC (g/L)
Primer	Speedhide Latex Masonry Block Filler, 6-7		43	Vinyl Acrylic	264
Midcoat to Crack Repairs	Pitt-Flex Exterior Masonry Coating 100% Acrylic Elaston	ıeı	46 ric	Acrylic	<250

Pittsburgh	Product Name	volume	Type	(g/L)
Elastomeric	Pitt-Flex Exterior Masonry Coating 100% Acrylic Elastome	46 eric	Acrylic	<250
Topcoat-satin	Manner Hall House & Trim Eggshell Flat Latex 79 Series	36	Acrylic	<250
Topcoat-s/g	Speedhide Latex Semi-gloss House & Trim	37	Acrylic	<250

3.4.4.1 Coating Application for Exterior 4

Dry Film Thickness Schedule

Prime Coat: 2.0 mils DFT minimum Midcoat: 4-5 mils DFT minimum Elastomeric: 4-5 mils DFT minimum

Topcoat: 2 coats at 2 mils DFT each coat

Spot Touch-Up and Overcoat Method

Apply a spot application of the complete elastomeric system(primer, midcoat and elastomeric) to all bare substrate areas.

After all repair areas have received the elastomeric system, overcoat the entire paintable surface with two coats of acrylic latex topcoats of the same coating manufacturer.

3.4.5 Exterior 5

Refer to table 5 for primer and acrylic topcoat for wood.

Table 5. Primer and Acrylic Topcoat for Wood

Sherwin William	s Product Name	% Solids volume	Resin Type	VOC (g/L)
Primer	A-100 Exterior Latex Wood Primer	36	Acrylic	123
Topcoat-satin	A-100 Exterior Latex Satin House & Trim, A82 Series	34	Acrylic	102
Topcoat-gloss	A-100 Exterior Latex Satin House & Trim, A8 Series	33	Acrylic	132
		% Solids	Resin	VOC
Duron	Product Name	volume	Type	(g/L)
<u>Duron</u> Primer	Product Name Bond-N-Seal Exterior Acrylic House Paint Primer	•		
<u> </u>	Bond-N-Seal Exterior	volume	Type	(g/L)

<u>ICI</u>	Product Name	%	Solids volume	Resin Type	VOC (g/L)
Primer	Ultra-Hide Durus Exterior Acrylic Primecoat		32	Acrylic	143
Topcoat-satin	Decra-Shield Exterior 100% Acrylic Satin Finish		36	Acrylic	0
Topcoat-s/g	Decra-Shield Exterior 100% Semi-Gloss Finish		36	Acrylic	229
Benjamin Moore	Product Name	%	Solids volume	Resin Type	VOC (g/L)
Primer	Moore's Latex Exterior Primer, 102		41	Acrylic Modified	<350
Topcoat-satin	Moore's Latex House Paint, 102		66	Acrylic Modified	<350
Topcoat-s/g	Moore's Latex House & Trim 096		66	Acrylic Modified	<350
Pittsburgh	Product Name	%	Solids volume	Resin Type	VOC (g/L)
Primer	Speedhide Exterior Latex Wood Primer		39	Alkyd mod. Acrylic	<264
Topcoat-satin	Manor Hall House & Trim Eggshell Flat Latex 79 Seri	es	36	Acrylic	<250
Topcoat-s/g	Speedhide Latex Semi-gloss House & Trim		37	Acrylic	<250
		%	Solids	Resin	VOC
MAB	Product Name		<u>volume</u>	Type	(g/L)
Primer	Sea Shore/Four Seasons Latex Primer		32	Acrylic	250
Topcoat	Sea Shore/Four Seasons Acry Latex Trim Enamel	lic	36	Acrylic	290

3.4.5.1 Coating Application for Exterior 5

Dry Film Thickness Schedule

Prime Coat: 2 mils DFT minimum

Topcoat: 2 coats at 2 mils DFT minimum each coat

Spot Touch-Up Only Method

Apply a spot coat primer application to areas down to bare substrate.

Apply two topcoat applications in a squared off fashion such that the smallest possible rectangular patch is used to cover the area of repair. Spot Touch-Up and Overcoat Method:

Apply two complete topcoat applications to the entire paintable surface.

Spot Touch-Up and Overcoat Method

Apply a spot coat primer application to areas down to bare metal.

Apply one full coat primer and two full coat topcoat applications to the entire paintable surface.

Complete Removal and Paint

Apply one full coat primer, and two full coat topcoat application to the entire paintable surface.

Note: If this item is replaced with a new piece of wood, apply one full coat of primer to all surfaces and edges of this new piece prior to installation. Contractor will be compensated for this additional prime coat application.

3.4.6 Exterior 6

Refer to table 6 for DTM acrylic primer and acrylic topcoat for miscellaneous metals.

Table 6. DTM Acrylic Primer And Acrylic Topcoat For Miscellaneous Metals

Sherwin Williams	Product Name	٠	olids olume	Resin <u>Type</u>	VOC (g/L)
Primer	DTM Acrylic Primer		46	Acrylic	138
Topcoat-s/g	Metalatex Semi-gloss Coating		34	Acrylic	125
Topcoat-gloss	DTM Acrylic Gloss Coating		39	Acrylic	230
Duron	Product Name	•	olids olume	Resin <u>Type</u>	VOC (g/L)
Primer	Universal Acrylic Metal Primer, 33-105		37	Acrylic	<450
Topcoat-s/g	DTM Acrylic Coatings Semi- gloss series 95-06X		43	Acrylic	<450
Topcoat-gloss	DTM Acrylic Coatings Gloss series 95-05X		36	Acrylic	205
Ameron	Product Name	٠	olids olume	Resin <u>Type</u>	VOC (g/L)
Primer	Amercoat 148		41	Acrylic	193
Topcoat-satin	Amercoat 220		35	Acrylic	180
Topcoat-s/g	Amercoat 220		35	Acrylic	180

Carboline	Product Name	•	Solids volume	Resin Type	VOC (g/L)
Primer	Carboline D2258		36	Acrylic	75
Topcoat-s/g	Carboline 3350		36	Acrylic	283
<u>Pittsburgh</u>	Product Name	જ	Solids volume	Resin Type	VOC (g/L)
Primer	Pitt-Tech One Pack Int./Ex DTM Industrial Enamels	t.	37	Acrylic	<250
Topcoat-satin	Pitt-Tech One Pack Int./Ex High Performance Waterbour Satin DTM Industrial Ename	ne	37	Acrylic	<250
Topcoat-gloss	Pitt-Tech One Pack Int./Ex High Performance Waterbour High Gloss DTM Industrial	ne	37 mels	Acrylic	<250
Benjamin Moore	Product Name		% Solids volume	Resin <u>Type</u>	VOC (g/L)
Primer	M04 Acrylic Metal Primer		40	Acrylic	51
Topcoat-s/g	M29 STM Acrylic Semi-gloss		40	Acrylic	207
Topcoat-gloss	M28 Acrylic Gloss Enamel		34	Acrylic	243

3.4.6.1 Coating Application for Exterior 6

Dry Film Thickness Schedule

Prime Coat: 2 mils DFT minimum

Topcoat: 2 coats at 3 mils DFT minimum each coat

Spot Touch-Up Only Method

Apply a spot coat primer application to areas down to bare substrate.

Apply two topcoat applications in a squared off fashion such that the smallest possible rectangular patch is used to cover the area of repair. Spot Touch-Up and Overcoat Method:

Apply two complete topcoat applications to the entire paintable surface.

Spot Touch-Up and Overcoat Method

Apply a spot coat primer application to areas down to bare substrate.

Apply two complete topcoat applications to the entire paintable surface.

Complete Removal and Paint

Apply one full coat primer application to the entire paintable surface.

3.4.7 Exterior 7

These coatings are exempt from the 3.51b/gal(420g/1) VOC restriction. Refer to table 7 for high temperature service greater than 300 degrees F.

Table 7. High Temperature Service Greater Than 300 Degrees F

<u>Carboline</u>	Product Name	% Solids volume	Resin <u>Type</u>	VOC (g/L)
Primer	CarboZinc 11	N/A	Zinc Silicate	492
Topcoat-gloss	Carboline 1248	40	Silicone Acrylic	540
Benjamin Moore	Product Name	% Solids volume	Resin <u>Type</u>	VOC (g/L)
Primer	M66-77/M65 High Heat Coating Zinc Gray	49	Silicone	441
Topcoat- Aluminum	M66-78 High Heat Aluminum	40	Silicone	561
Topcoat-Black	M66-80 High Heat Coating Black	40	Silicone	518
P	Dundank Name	% Solids	Resin	VOC
Duron	Product Name	volume	Type	(g/L)
Primer	Heat Resistant Aluminum 94-114	41	Alkyd	493
Topcoat	Heat Resistant Aluminum 94-114	41	Alkyd	493

3.4.7.1 Coating Application for Exterior 7

Dry Film Thickness Schedule

Prime Coat: 1.5-2 mils DFT minimum

Topcoat: 2 coats at 1-1.5 mils DFT minimum each coat

Spot Touch-Up Only Method

Apply a spot coat primer application to areas down to bare substrate.

Apply two topcoat applications in a squared off fashion such that the smallest possible rectangular patch is used to cover the area of repair.

Spot Touch-Up and Overcoat Method

Apply a spot coat primer application to areas down to bare substrate.

Apply two complete topcoat applications to the entire paintable surface.

Complete Removal and Paint

Apply one full coat primer and two full topcoat applications to the entire paintable surface.

3.4.8 Exterior 8

Refer to table 8 for acrylic topcoat for miscellaneous non-ferrous metal, galvanized metals, and PVC.

Table 8. Acrylic Topcoat For Miscellaneous Non-Ferrous Metal, Galvanized Metals, And PVC

Sherwin Williams	Product Name	% Solids volume	Resin <u>Type</u>	VOC (g/L)
Topcoat-s/g	Metalatex Semi-gloss Coating	34	Acrylic	125
Topcoat-gloss	DTM Acrylic Gloss Coating	39	Acrylic	230
Duron	Product Name	% Solids volume	Resin <u>Type</u>	VOC (g/L)
Topcoat-s/g	DTM Acrylic Coatings Semi- gloss series 95-06X	43	Acrylic	<450
Topcoat-gloss	DTM Acrylic Coatings Gloss series 95-05X	36	Acrylic	205
Ameron	Product Name	% Solids volume	Resin <u>Type</u>	VOC (g/L)
Topcoat-satin	Amercoat 220	35	Acrylic	180
Topcoat-gloss	Amercoat 220	35	Acrylic	180
Carboline	Product Name	% Solids volume	Resin <u>Type</u>	VOC (g/L)
Topcoat-s/g	Carboline 3350	36	Acrylic	283
Pittsburgh	Product Name	% Solids volume	Resin Type	VOC (g/L)
Topcoat-satin	Pitt-Tech One Pack Int./Ext High Performance Waterbourn Satin DTM Industrial Ename	ne	Acrylic	<250
Topcoat-gloss	Pitt-Tech One Pack Int./Ext High Performance Waterbourn High Gloss DTM Industrial	ne	Acrylic	<250
Benjamin Moore	Product Name	% Solids volume	Resin <u>Type</u>	VOC (g/L)
Topcoat-s/g	M29 STM Acrylic Semi-gloss	40	Acrylic	207
Topcoat-gloss	M28 Acrylic Gloss Enamel	34	Acrylic	243

3.4.8.1 Coating Application for Exterior 8

Due to the nature of these coatings and the type of substrates involved, an individual primer is not required.

Dry Film Thickness Schedule

Topcoat: 3 coats at 2-3 mils DFT minimum each coat

Spot Touch-Up Only Method

Apply a single spot coat primer application to areas down to bare substrate.

Apply two topcoat applications in a squared off fashion such that the smallest possible rectangular patch is used to cover the area of repair.

Spot Touch-Up and Overcoat Method

Apply a single spot coat primer application to areas down to bare substrate.

Apply two complete topcoat applications to the entire paintable surface.

Complete Removal and Paint

Apply three full coat topcoat applications to the entire paintable surface.

3.4.9 Exterior 9

Refer to table 9 for acrylic traffic marking paint for striping asphalt and concrete.

Sherwin Williams	Product Name	% Solids volume	Resin <u>Type</u>	VOC (g/L)
Topcoat-white	Setfast Acrylic Water- bourne Traffic Marking Paint(TM 226)	45	Acrylic	150
Topcoat-yellow	Setfast Acrylic Water- bourne Traffic Marking Paint(TM 226)	45	Acrylic	150
		% Solids	Resin	VOC
Duron	Product Name	volume	Type	(g/L)
Topcoat-white	Lead Free Latex Traffic Paint(95-100)	48	Acrylic	<250
Topcoat-yellow	Lead Free Latex Traffic Paint(95-109)	43	Acrylic	<250

3.4.9.1 Coating Application for Exterior 9

Due to the nature of these coatings and the type of substrates involved, an individual primer is not required.

Dry Film Thickness Schedule

Topcoat: 6-7 mils DFT

Spot Touch-Up Only Method

Does not apply in this situation.

Spot Touch-Up and Overcoat Method

Apply one complete application to the entire stripe surface.

Complete Removal and Paint

Apply one complete application to the entire stripe surface.

3.4.10 Exterior 10

Use acrylic latex for facility identification stenciling.

Use any recommended topcoat from Exterior 1 coating systems provided that it is tinted black or in a contrasting color to existing topcoat as directed by the Project Engineer.

Type of font, size of letters, and location of facility identification number shall be similar to original unless otherwise directed by Project Engineer. Apply one coat of stenciling paint as to sufficiently hide underlying topcoat.

No additional payment will be given for this stenciling work. It shall be included in the price of maintenance coating of the facility.

-- End of Section --